meter. Microscopical examination of tissue shows a papillo carcinoma.

Treatment and result: Three treatments were given, employing 100 mgrms. of radium element. Radium was placed under the tumor in the vagina, and my special platinum needle containing radium was inserted into the tumor mass through a slightly modified Burger's operating cystoscope. After placing the needle the cystoscope was withdrawn, and the radium allowed to remain for the desired time. A few days following treatment, patient began passing fragments of tumor with the urine, this continued for about three weeks with more or less pain and at times some bladder spasms. Seven weeks after the first treatment, cystoscopic examination by Dr. W. B. Dakin failed to reveal any evidence of bladder involvement. Vaginal examination negative and there were no symptoms of involvement elsewhere. The general condition of the patient has also been greatly improved, and the case is apparently cured.

Case No. 76. K. McD. Female, age 45. (See figures 3 and 4.) Referred by Dr. Bogue.

Diagnosis: Squamous cell epithelioma. (Confirmed by section and microscopical examination.)

Present condition: About six months before examination patient noticed small nodule on margin left lower lid, extending to opening of lachrymal duct and rapidly increasing in size.

Examination: Ulcerated tumor about 1.5 by 1 cm. in diameter, on margin of left lower lid. Marked conjunctivitis.

Treatment and result: Treatment consisted of three applications of 55 mgrms. of radium. Six weeks later tumor had entirely disappeared and condition apparently cured. No impaired function nor disfigurement, excepting absence of lower lashes. Lachymal duct open.

Case No. 96. F. C. Male, age 48.

Diagnosis: Endothelio sarcoma (confirmed by section and tissue examination).

Family and general history: Negative.

Present condition: About one year previous to examination patient had three lower right molars extracted. Teeth had been badly decayed and giving trouble for some time. Some soreness remained, and for about eight months patient had been aware of a tumor in this location which had gradually increased in size and recently had become painful when eating.

Examination: Tumor about 7 cm. long and 2 cm. in diameter, involving right inferior maxillary bone and extending into oral cavity. Small ulceration of mucous membrane at apex of tumor.

Treatment and result: Platinum needles containing 50 mgrms. of radium were inserted into tumor substance, and 40 mgrms. placed over tumor. Tumor promptly began to decrease in size, and after eight weeks had completely disappeared. There is no evidence of involvement elsewhere.

Case No. 123. Mrs. W. G. Married. Age, 44.

Previous history: Married at 19, four miscarriages, self induced at about two months term, last 10 years ago. No pregnancy since. Menstral history normal. Until about six months previous to examination general health was good.

Present condition: About six months previous to examination menstral period lasted about two weeks with profuse hemorrhage, next two periods same, and last three months continuous flowing, at times profuse, also increasing odorous discharge, loss of weight, weak and anemic. Red blood count 2,300,000, hemoglobin 42%, leukocytes 6,000.

Examination: Offensive odorous discharge, large cauliflower mass involving cervix and extending into adjacent vaginal walls, induration extending down two-thirds of the anterior vaginal wall, tumor friable and bleeds readily.

Treatment and result: Four 12-hour treatments using 87 mgrms. of radium were given, with an interval of 24 to 72 hours between treatments. Before the last treatment was given hemorrhage had practically stopped, marked decrease in the odorous discharge, and sufficient absorption of the mass had occurred to make it possible to locate the cervical canal. In less than two weeks all hemorrhage and discharge had ceased and there was a marked improvement in the general health and condition of the patient. Examination six weeks later revealed no evidence of involvement excepting slight redness of the cervix. Red blood count 4,700,000, hemoglobin 85%. Additional prophylactic treatment was given. While it is too early to speak of this case as cured, a number of months have elapsed without any evidence of recurrence, and the patient enjoys apparently normal health. This case is typical of the palliative effect obtained by the proper use of radium in a very large percentage of cases. Statistics show more than 25% of clinical cures after one or more years have elapsed.

THE MALARIA PROBLEM IN THE RICE FIELDS.

By STANLEY B. FREEBORN, University of California.

The advent and phenomenal growth of the rice industry in California has introduced a serious public health problem. The growing of rice demands that the entire acreage under cultivation be flooded from approximately June 1st to October 15th to a depth of about five inches with water, stagnant or in a gentle current.

Unlike the malarial mosquitoes of other rice-growing districts, the Anophelines of the Sacramento Valley find their optimum breeding grounds in these fields flooded for rice culture. As a result, mosquitoes, and consequently malarial cases have increased in direct proportion to the growth of the industry.

The summer of 1912 saw the first commercial planting of rice in California. This was at Biggs in the Sacramento Valley, and totalled 1400 acres. Each year since has shown at least a hundred per cent. increase until this year's estimate places the acreage of rice at 80,000. Of this the Sacramento Valley contributes 70,000 acres and the San Joaquin 10,000.

Agriculturally, the production of rice is an extremely fortunate venture as it utilizes land made unsuitable for any other crop either on account of nitrogeneous insufficiency due to previous croppings or on account of unfavorable texture. The annual rice consumption of six pounds per capita far exceeds the domestic supply. This fact coupled with a fairly heavy protective tariff and the knowledge that most of the land used for rice is worthless for any other crop adds millions to the state's wealth this year and insures a permanent place among California's agricultural projects for rice culture.

The attractive returns of the industry have

caused a headlong rush on the part of the ranchers to put their land into rice. This mania for speedy and lucrative returns has left its mark on all branches of the industry. Already many ranchers by their utter disregard of all agricultural tenets, such as crop rotation and seed selection, have stripped the soil of nourishment and clogged the fields with weeds. The same haste and carelessness has characterized the use of water. The irrigation ditches are anything but water tight and the inevitable result is that the surrounding fields have been converted into veritable bogs. Almost without exception the roadsides are bordered, and in some cases actually covered, with stagnant pools that are developing myriads of malarial mosquitoes every month. It is a conservative estimate that 50 per cent. of the mosquitoes of the rice field country find their breeding places in these inexcusable situations outside the fields under cultivation.

There are two species of Anophelines breeding in the rice fields and throughout the Sacramento Valley. The most common one, *Anopheles occidentalis*, is a medium sized, brownish mosquito with four distinct black spots on its wings. This species is known to be a malaria carrier. The other, *Anopheles pseudopunctipennis* looks very much like the former, except that the wings are mottled and marked with two yellow spots on the anterior margin. This species is not generally included in the malaria carrying group but circumstantial evidence seems to incriminate it.

In midsummer, twelve days generally suffices for the mosquito's growth from egg to adult, lengthening to eighteen or twenty days in the spring and fall. About a week after emerging from the pupa or "tumbler" stage in which the larva transforms into the adult, the female mosquito lays approximately 125 eggs. This process is in constant progress from March to November in the Sacramento Valley.

All the rice field mosquitoes pass the winter as unengorged adults, i. e. adults that have not had a suck of blood. Hence it will be seen that the plasmodium must be carried over the winter in the body of human beings owing to the fact that all infectious mosquitoes must of necessity have a meal of blood in order to become infected and are thus unable to pass through the winter.[1] If, therefore, all persons harboring gametes could be cured during the winter, the mosquitoes emerging from hibernation in the spring months would have no sources at which to become infected and malaria would be eliminated from the community.

In this land of personal liberty it is impracticable, however, to bank our hopes on such a procedure no matter how strongly it is urged or how efficient its result. Another method of prevention is to control the mosquitoes, for in the absence of Anopheline mosquitoes malaria cannot be transmitted from person to person and the disease would be stamped out with the recovery of those already infected. Both of these practices,—the winter control of gamete carriers and the control of the mosquitoes, have their ardent proponents, but the ideal system seems to rest in the careful combination of both.

The control of the rice field mosquitoes is the most difficult problem that has yet been encountered in the work of mosquito abatement. At the present time there is no larvicide known that can be safely and economically introduced into the irrigation water to kill the larvae present. Oil, the usual larvicide, will kill the rice plants as speedily as it will the mosquito larvae. Salt, although efficient in controlling fresh water mosquitoes, will cut down the rice yields and render the land unfit for further use. Vegetable larvicides are at once too expensive and inefficient to consider. Among the natural enemies, fish and dragon flies are the most important. The former are handicapped by the irrigating systems and the shallowness of the water to such an extent that at present their economic value as mosquito feeders is almost negligible. Dragon flies undoubtedly catch a great number of adult mosquitoes but their life cycle requires an entire season and their brood is comparatively small. In short, they can be looked upon as a check, but doubtfully as a control.

The breeding of mosquitoes outside the rice fields in pools caused by seepage is, however, inexcusable. In the first place, careful and intelligent construction of the irrigation ditches would do away with the majority of these breeding places except where the water table has been raised to the surface, and secondly, those pools that would not be eliminated by careful construction could, in a majority of cases, be drained or filled. All these expedients failing, surface oiling with a fuel oil of about 28 degrees Beaumé will destroy all the larvae present at that time. Oiling, however, must be repeated at intervals of two weeks throughout the breeding season.

The water is turned into the fields about June 1st. The mosquitoes, however, have been breeding in available pools since March or sometime earlier. Every mosquito destroyed prior to the irrigation of the rice fields means the cutting off of its countless progeny that would otherwise breed unmolested in the flooded fields throughout the season. Then, too, at the end of the season, the mosquitoes breed for a month or more in neglected pools after the water is drawn from the fields, producing the adult mosquitoes that overwinter and start the next season's crop. It seems plain, therefore, that if an ardent anti-mosquito campaign were waged before the water is turned into the fields in the spring and after it is drained off in the fall, together with the control of outside pools during the flooded period, that the mosquitoes left to start the rice field generations and hence the number of malarial cases, would be greatly reduced in number.

Malaria bearing mosquitoes seldom travel more than 500 yards from their breeding places and after their first suck of blood will bite only at dusk or at night. Thus it will be seen that persons whose occupations or residence takes them into

1 Mitzmain, M. B. Public Health Report, Vol. xxx, No. 29, July 16, 1915, of U. S. P. H. D.

the rice field districts at dusk or at night should depend on careful quinine prophylaxis in conjunction with tightly screened dwellings and veils.

SUMMARY.

1. The cultivation of rice which demands shallow, practically stagnant water throughout the summer months, has increased the number of mosquitoes and malarial cases in proportion to the phenomenal growth of the industry.

2. Fifty per cent. of the malarial mosquitoes are breeding in pools adjacent to the rice fields.

3. The mosquitoes breed in neglected pools for two months or more before the rice fields are flooded and for another month after the water is drained from the fields.

4. The solution of the malaria problem in the rice fields rests to-day on (1) the elimination of all breeding places outside the rice fields before, after and during the time the fields are flooded, and (2) thorough quinine treatment during the winter months in conjunction with quinine prophylaxis, and careful screening during the months when mosquitoes are prevalent.

COMMON ERRORS IN DIAGNOSIS OF SYPHILIS OF SKIN AND MUCOUS MEMBRANES.*

By GEORGE D. CULVER, M. D., San Francisco.

Syphilitic lesions of the skin and mucous membranes are often of more than ordinary interest. Many persist through months or years without treatment or even in spite of indifferent antisyphilitic treatment. Some simulate other conditions so closely that no wonder incorrect diagnoses are made.

Even with excellent laboratory assistance in diagnosis it is possible for atypical lesions to run the gauntlet and escape proper treatment for a long time. The keenest observer may fail to recognize a lesion that when seen later may stand out as typical. Syphilis, though showing itself in a great variety of forms, tends always to types of eruption, depending largely upon the location of the lesion. This repetition of type in definite areas is most interesting and often helpful toward a correct conclusion.

The natural dependence of the diagnostician upon good laboratory proofs tends to make him rely less upon the clinical picture. This leads to error in both positive and negative conclusions. Our first clinical impressions, if the foundations are sound, are often of greater value than technically determined conclusions if those conclusions fail in absolute positiveness. In no other disease in a small percentage of cases are the technical findings more apt to mislead than in syphilis.

This is not meant to be an exhaustive discussion. In such a big subject as syphilis it is possible to mention in a short paper only a few of the most common errors. I have, therefore, limited my remarks to actual experience.

As to the initial lesion of syphilis, failure to recognize a chancre is still frequent. This is especially true of extragenital chancre. An ugly, hard, persistent sore, located anywhere extragenitally, may be a chancre even if as unusually placed as upon the instep or an eyelid, or the back of the neck. A not uncommon location is upon the lips, where usually it is a rapidly growing, ugly looking sore which ulcerates, and looks and feels much like a swiftly developing epithelioma. As a rule it has the same cartilaginous hardness, and the same central ulceration. It may involve the whole lip. Nevertheless, though the mimicry of chancre to epithelioma may often be close, an error should be avoided. Any large hard ulcer of a lip that has been present not longer than two months, usually in a young person of the age when such a location of infection would not be unlikely, and which is accompanied by swollen lymphatic nodules, must be regarded as possibly a chancre. I recall an instance of a man with a chancre of the upper lip, which was so slow in yielding to treatment that he went elsewhere for advice, and was persuaded to have it cut out. It promptly sprang up again, and he returned for further internal treatment, which was finally successful. The mouth is a situation in which it is easy to err in a diagnosis. Two instances in which the tonsil was removed because of chancre, in which later evidence of syphilis was convincing, have come to my attention within the last few months. In one case there was a reappearance of the indurated primary ulcer in the tonsillar site after removal of the tonsil. An unusual feature of this case was the appearance of the roseola upon the soles and nowhere else. It is important to differentiate a syphilitic ulceration of the tonsil, whether primary or gummatous, from Vincent's angina, which can give an almost identical picture. In the latter condition the microscopical findings are so definite as quickly to dispel any doubt.

I saw an instance of an undiagnosed primary lesion of the lower gums which was so extensive as to result in the removal of all the lower teeth. It was five months before a correct diagnosis was made. A single gummatous ulcer of the tongue may easily be mistaken for a chancre. A chancrous ulcer is usually of more marked cartilaginous hardness, and the base and walls look more active, giving an impression of an acute inflammatory process, while the edges of a late ulcer are either steep and punched out looking or undermined, and the base is gently raised, flattened and a duller red. What may make it more puzzling is the fact that enlarged lymphatic nodules under the jaw are not an unusual accompaniment of late lesions in the mouth, and when present they are likely to be tender. The lymphatic inflammation is in all probability due to secondary infection in the open wound. This was eminently the case in an instance recently seen, in which the lesions were situated on the upper surface of the tongue tip, a situation peculiarly exposed to irritation and friction against the front teeth.

A very small sore on the penis not unlike a few broken vesicles of herpes simplex and without perceptible induration, may prove to be a chancre. Cauterization of such a sore should be inflexibly

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